

## Claims

1. A cycle-based communication system (1) for transmitting useful data (DATA) between users (3) of the system (1), including a data bus (2) and the users (3) connected to it, in which the data transmission is effected within cyclically repeating timeframes (4) with at least two timeslots (5) each, and each timeslot (5) is intended for transmitting one message (Ni), one message (Ni) contains at least some of the useful data (DATA), and each message (Ni) is assigned an identifier (ID), characterized in that the identifier (ID) is stored in each message (Ni) as part of the message (Ni); that the or each message (Ni) additionally includes data about the cycle; that the timeslots (5) have a fixed length; and that at least one of the timeslots (5) of one timeframe (4) can be used, in various cycles, for offset transmission of different messages (Ni) that are not intended for transmission in every cycle.
2. The communication system of claim 1, characterized in that the data about the cycle pertain to current cycle.
3. The communication system of claim 2, characterized in that the data pertaining to the current cycle include an ordinal number of the cycle.
4. The communication system of one of claims 1-3, characterized in that each message is additionally assigned time data that pertain to a timeslot and that can be learned from the identifier.

5. The communication system of claim 4, characterized in that the time data include data about the chronological position of a timeslot within a timeframe.

6. A method for transmitting useful data (DATA) in a cycle- based communication system (1) between users (3) of the system (3) via a data bus (2), to which the users (3) are connected, in which the useful data (DATA) are transmitted within cyclically repeating timeframes (4) each with at least two timeslots (5), and in each timeslot (5) one message (Ni) is transmitted, at least some of the useful data (DATA) are stored in memory in a message (Ni), and each message (Ni) is assigned an identifier (ID), characterized in that the messages (Ni) are transmitted in timeslots (5) of fixed length; that the identifier (ID) is stored in memory in the message (Ni) as part of the message (Ni); that in the or each message (Ni), data about the cycle are stored in memory; that in at least one of the timeslots (5) of a timeframe (4), different messages (Ni) are transmitted offset from one another in various cycles, and in the at least one timeslot (5), those messages (Ni) that are not intended for transmission in every cycle are transmitted offset from one another.

7. The transmission method of claim 6, characterized in that the users (3) of the communication system (1) are each allocated at least one predeterminable timeslot (5) of the timeframes (4) for data transmission.

8. The transmission method of claim 6 or 7, characterized in that data pertaining to the current cycle are additionally stored in memory in the or each message (Ni).

9. The transmission method of claim 8, characterized in that the cycle data are stored in memory in a message (Ni) as part of the identifier (ID) of that message.

10. The transmission method of claim 8 or 9, characterized in that the messages (Ni) transmitted over the data bus (2) in the timeslots (5) of the timeframes (4) are observed by the users (3) of the communication system (1); that the identifiers (ID) and the cycle data of the messages (Ni) are compared with predeterminable values, stored in memories of the observing users (3), for the identifier (ID) and the cycle data, and at least the useful data (DATA) of a transmitted message (Ni) are received by the user (3) only if the identifier (ID) and the cycle data of the message (Ni) match the predeterminable values, stored in the memory of the user, for the identifier (ID) and the cycle data.

11. The transmission method of one of claims 8-10, characterized in that the data traffic on the data bus (2) of the communication system (1) is observed; the current cycle data are monitored by the users (3); and a message (Ni) is sent by a user (3) in a predeterminable timeslot (5) only if the current cycle data match a predeterminable value, stored in a memory of the user (3), for the cycle data.